

What is claimed is;

1. A processing apparatus for fluid comprising a fluid pressure applying mechanism for applying a predetermined pressure to fluid to be processed; at least two processing portions of a first processing portion (10) provided in a tight-closed passage through which the fluid under said predetermined pressure flows and a second processing portion (20) which is movable to or away from the first processing portion (10); at least two processing faces of a first processing face (1) and a second processing face (2), both of which are disposed opposite to each other on said processing portions (10), (20) respectively; and a rotary drive mechanism for relatively rotating the first and second processing portions (10), (20), thereby processing the fluid between both processing faces (1), (2); characterized in that at least the second processing portion (20) of the first and second processing portions (10), (20) is provided with a pressure receiving face as set in a predetermined ratio of balance while at least one part of the pressure receiving face is constituted of the second processing face (2); said fluid under the predetermined pressure is allowed to travel between the first and second processing faces (1), (2), which relatively rotate and are movable to or away from each other in the course of forming fluid film with predetermined thickness, whereby said fluid is processed to a desired condition of dispersion, emulsification, mixture, grinding, attrition, or atomization.
2. A processing apparatus for fluid as defined in claim 1, characterized in that it includes a buffer mechanism for adjusting vibration and alignment of at least one of the first and second processing faces (1), (2).
3. A processing apparatus for fluid as defined in claim 1, characterized in that it includes a displacement adjusting mechanism for adjusting displacement of the shaft due to wear-out of one or both of the first and second processing face (1), (2) to maintain the thickness of the fluid film formed therebetween.
4. A processing apparatus for fluid as defined in claim 1,

characterized in that it includes a pressure adjusting mechanism for adjusting pressure applied to the fluid to be processed.

5. A processing apparatus for fluid as defined in claim 1, characterized in that it includes a separation control portion of defining the maximum interval between said first and second processing faces (1), (2) to prevent further separation thereof.
6. A processing apparatus for fluid as defined in claim 1, characterized in that it includes an access control portion of defining the minimum interval between the first and second processing faces (1), (2) to prevent further access thereof.
7. A processing apparatus for fluid as defined in claim 1, characterized in that both of the first and second processing faces (1), (2) are designed to rotate mutually in the opposite directions.
8. A processing apparatus for fluid as defined in claim 1, characterized in that it includes a temperature control jacket for controlling the temperature of one or both of the first and second processing faces (1), (2).
9. A processing apparatus for fluid as defined in claim 1, characterized in that at least a part of one or both of the first and second processing faces (1), (2) is subjected to planishing with mirror finish.
10. A processing apparatus for fluid as defined in claim 1, characterized in that one or both of the first and second processing faces (1), (2) is provided with recesses.
11. A processing apparatus for fluid as defined in claim 1, characterized in that it includes a different introduction passage independent of said fluid passage, at least one of the first and second processing faces (1), (2) having an opening which admits to said introduction passage so as to enable introduction of a substance or another fluid to be processed from the introduction passage into the fluid being processed.
12. A processing apparatus for fluid comprising a fluid pressure applying mechanism for applying predetermined pressure to fluid to be processed; at least two processing

faces of the first processing face (1) and a second processing faces (2), both of which are movable to or away from each other and connected with the tight-closed fluid passage through which the fluid under predetermined pressure flows; a face contact pressure applying mechanism for applying contact pressure between the two processing faces (1), (2); and a rotary drive mechanism for relatively rotating the first and second processing faces (1) (2), thereby processing the fluid between both processing faces (1), (2); characterized in that said fluid under predetermined pressure is allowed to travel between the first and second processing faces (1), (2), which relatively rotate, while being applied to said face contact pressure, in the course of forming fluid film with predetermined thickness, whereby said fluid is processed to a desired condition of dispersion, emulsification, mixing, grinding, attrition, or atomization.

13. A processing method for fluid comprising steps of applying a predetermined pressure to fluid to be processed; connecting at least two processing faces of a first processing face (1) and a second processing face (2), which are movable to or away from each other, with the tight-closed passage through which the fluid under the predetermined pressure flows; applying a face contact pressure which may urge both processing faces (1), (2) to access to each other; relatively rotating the first and second processing faces (1), (2); and allowing the fluid to travel between said processing faces (1), (2) in their rotation, thereby the fluid is processed therebetween; characterized in that said predetermined pressure as applied to the fluid to be processed provides a separation force for separating both processing faces (1), (2) by holding the balance established between the separation force and the contact pressure by the medium of the fluid between the processing faces (1), (2), the balance maintaining a predetermined interval therebetween in a micro-scale width, the fluid traveling therebetween in the form of fluid film with predetermined thickness, whereby the fluid is processed to a desired

condition of dispersion, emulsification, mixture, grinding, attrition, or atomization.

14. A processing apparatus for fluid, characterized in that it comprises at least two processing members of a first processing member (101) and a second processing member (102), which are placed opposite to each other and at least one of which rotate to the other for the processes of dispersion, emulsification, mixture, grinding, attrition, or atomization, wherein fluid is fed from the center portion of said rotary motion to the interval between said both processing members and then discharged outside thereof; at least one of said first and second processing members (101), (102) being so arranged as to be movable to or away from each other; a biasing mechanism acting on both processing members to bias at least in the direction of accessing to each other; and a dynamic pressure generating mechanism provided with the both processing members to act to direct a force of the fluid traveling between both processing members for their separation.
15. A processing apparatus for fluid characterized in that it comprises at least two processing members of a first processing member (101) and a second processing member (102), which are placed opposite to each other and at least one of which rotate to the other for the processes of dispersion, emulsification, mixture, grinding, attrition, or atomization, wherein fluid is fed from the center portion of said rotary motion to the interval between said both processing members (101),(102) and then discharged outside thereof; at least one of said first and second processing members being so arranged as to be movable to or away from each other; and said both processing members (101),(102) include planished flat portions, one of the processing members (101),(102) having grooves formed on the flat portion, each of said grooves stretching outward from the center of the processing member, and having a flow limiting portion for limiting the flow traveling outward from the center of the processing member after it has passed through said groove.

16. A processing apparatus for fluid as defined in claim 15, characterized in that said flow limiting portion is formed to generally decrease the sectional area of the groove from the inner part thereof toward the periphery of the processing member.
17. A processing apparatus for fluid as defined in one of claims 14 and 15, characterized in that at least one of said first and second processing members (101), (102) is provided with a floating mechanism, which enables both processing members (101), (102) to access to or separate from each other, while an eccentric behavior of at least one of both processing members (101), (102) arising from the rotary motion may be absorbed by the other.
18. A processing apparatus for fluid comprising at least two processing members of a first processing member (101) and a second processing member (102), both of which are placed opposite to each other and at least one of which rotate to the other to perform the process such as dispersion, emulsification, mixture, grinding, attrition, or atomization, characterized in that fluid itself to be processed or transporting a substance to be processed is fed from the center of said rotary motion to the interval between the first and second processing members (101), (102), and then discharged outside of said members; a floating mechanism being arranged so as to enable said first and second processing members (101), (102) to access to or separate from each other and to change the directions of the rotary shafts of both processing members (101), (102); a biasing mechanism being designed to bias said processing members (101), (102) at least in the direction of accessing to each other; and a dynamic pressure generating mechanism serving to convert a force by the fluid traveling through the interval between both processing members (101), (102) into separation of both processing members (101), (102), thereby the micro-scale clearance therebetween may range from 0.1 to 10 microns.
19. A deaerator with atomizing apparatus for removing bubbles from the atomized substance, characterized in that it

employs the processing apparatus for fluid as defined in any one of claims 1, 12, 14, 15, and 18 as an atomizing apparatus.

20. A deaerator with atomizing apparatus for removing bubbles from the atomized substance, characterized in that the atomizing apparatus comprises at least two disks of a first disk and a second disk, both of which are placed opposite to each other and at least one of which rotate to the other; and an interval retaining mechanism of retaining a predetermined interval between both disks; the opposite faces of both disks being processing faces and planished with mirror finish; an inlet portion of supplying a substance to be processed between both processing faces; an discharge portion of discharging the substance therefrom; wherein atomization of the substance is processed between both processing faces can be processed in rotation.
21. A deaerator with atomizing apparatus of removing bubbles from the atomized substance, characterized in that the atomizing apparatus comprises at least two processing members of a first processing member and a second processing, at least one of which rotate to the other and both of which are respectively provided a processing face placed opposite to each other and planished with mirror finish; both processing faces, where a substance to be processed is fed, performing an atomization of a substance therebetween; a floating mechanism provided in at least one of the first and second processing members to enable both processing members to access to or separate from each other, while an eccentric behavior of at least one of both processing members arising from the rotary motion may be absorbed by the other; a biasing mechanism acting to bias said processing members at least in the direction of accessing to each other; the separating mechanism acting to urge both processing members into separation; separating mechanism retaining a micro-scale interval between both processing members in rotation against the action of the biasing mechanism.
22. A deaerator with atomizing apparatus defined in claim 21, characterized in that it includes a vacuum pump of extracting the substance which has passed between the first and second

**processing members.**